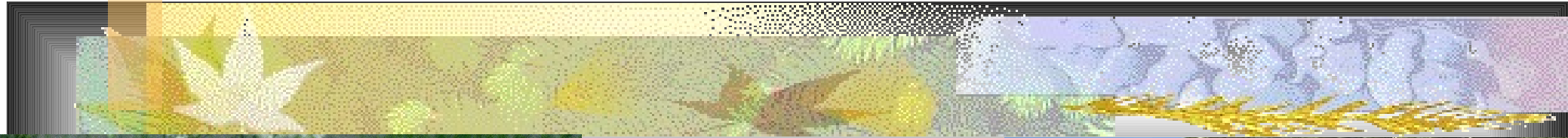




# A Guide to Botanicals and Herbary Supplement - 2004



Capital  
Conference





# Introduction

- Up to 36% of Americans are using some sort of dietary supplement for both prevention and therapeutic purposes, 13 billion dollar industry in 2000
- Objectives:
  - Become familiar with DSHEA 1994
  - Give an overview of common herbal and non-herbal supplements to the practicing physician





# Why People Use Them?

- Consumer Lab Survey (54% had multiple reasons)
  - General Health – 67%
  - Colds – 53%
  - Osteoarthritis – 39%
  - Energy Enhancement – 37%
  - Cholesterol Lowering – 29%
  - Cancer Prevention – 28%
  - Allergies – 27%
  - Weight Management – 25%



# Herbs and Supplements

## Regulatory Status

- ☀ Herbs are sold as “dietary supplements” like Vitamins
- ☀ **Dietary Supplement Health and Education Act of 1994**
  - --Safe, unless proven unsafe by FDA
  - --Not required to show bioequivalence
  - --Large variances between brands and lots
  - --“Standardized” means a specified concentration of a specific component, not the



# Regulatory Status

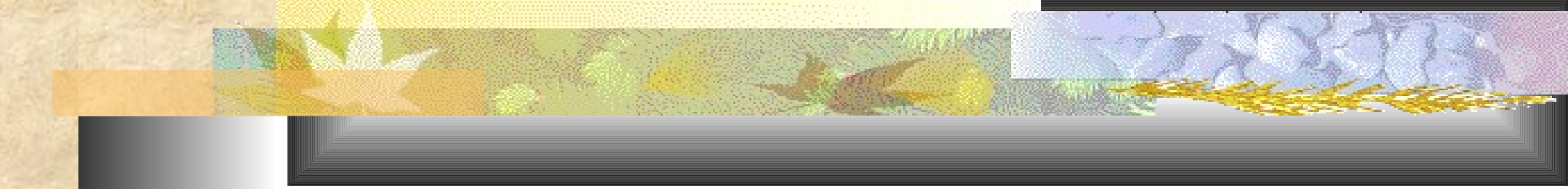
- DSHEA allows 4 types of statements
  - Role of nutrient in affecting “structure and function” in humans
  - Documented mechanism that supplement acts on to affect “structure and function”
  - Benefits due to dietary deficiency-must report the prevalence of disease in USA
  - Statements of general well-being from consumption of the supplement



# Regulatory Status

- Can say that product does something beneficial but can not make medical claims
- Any structure/function claims must also have

“This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease”

- 
- “This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease”



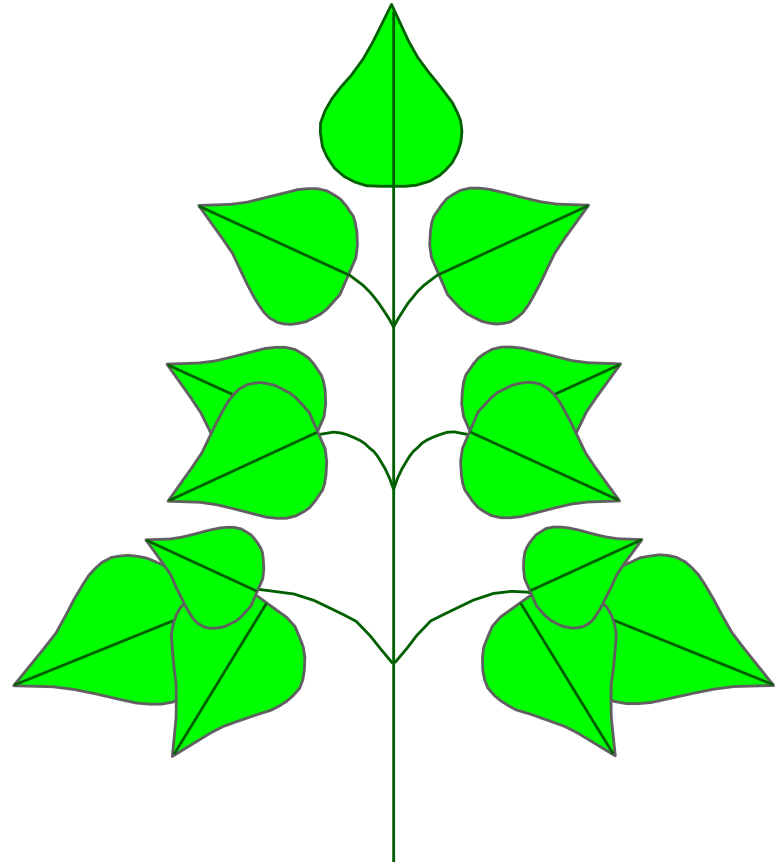
# Labeling Requirements

1. Brand Name
2. Product/Herb Name
3. Structure/Function Claims
4. Disclaimer
5. Number of Product and Net Weight of Each
6. Directions for use
7. Supplement Facts
8. Manufacturer's or distributor's name, city, state, zip code
9. Expiration date



# What is an Herb?

**Any part of a  
plant  
used for its  
medicinal,  
flavoring, or  
fragrant  
property**





# Herbal Medicine

- 7000 plants have medicinal applications
- 25% of “modern” prescription drugs have botanical origins
- Drug = drogge = to dry
- Botanical supplement sales= 13 billion/yr
- Western Herbalists use “simples”=1 herb
- Chinese and ayurvedic use many blended together



# Herbal Preparations

- ☀ Teas, infusions, decoctions – made by steeping and soaking herb in water for a few minutes
- ☀ Tinctures – herb is soaked in alcohol, glycerin or an alcohol-water combination
- ☀ Extract – a filtered or distilled tincture
- ☀ Tablets and capsules – drying the herb, powdering it shaping it into pills
- ☀ Topicals – herb added to emollient



# Botanical Safety

- **Rule of thumb...Avoid using herbs in infants, children, pregnant women, nursing mothers, patients w/ daisy allergies, patients on multiple medications**





# Ginseng

- “The essence of earth in the form of a human”
- Used as a stress reliever, aphrodisiac, athletic performance enhancer, energizer, appetite stimulant, immunostimulant, cancer treatment, oral hypoglycemic agent and life-prolonging agent (adaptogen)
- Used for over 2000 years
- 6 million Americans use it regularly



# Ginseng

- *Panax ginseng*-Asian Ginseng
  - Red-when steam treated
  - White-when dried
- *Panax quinquefolis*-American Ginseng
- *Eleutherococcus senticosus*- Siberian Ginseng
- 18 identified active ingredients or ginsenosides



# Ginseng

- Dosing: 100-600 mg root extract po daily or 3 gm brewed root tea or 0.6-3 gm cut or powdered root
- Usually 3 months use then period off
- Possibly safe for short term use, possibly unsafe over 3 months due to estrogen effects, **unsafe** in newborns
- Possibly effective for improved cognitive function, type 2 DM, and bronchitis
- Ineffective for enhancing athletic performance



# Ginseng

- Precautions and interactions: May increase BP. Overuse can cause headaches, insomnia, palpitations. Estrogen affects may cause vaginal bleeding, fibrocystic breasts  
Interacts with Lasix, decreases diuretic action
- One study demonstrates enhanced alcohol clearance in healthy men (Lee et al, 1987)
- May induce mania when used concurrently with antidepressants (Gonzalez-Seiji et al, 1995)
- May potentiate MAO inhibitors (Shader et al, 1988)
- May inhibit metabolism of barbituates
- May potentiate stimulants (caffeine most studied)
- May cause Haloperidol catalepsy





# Ginkgo biloba

- Uses: Dilates arteries, capillaries and veins  
Used to increase peripheral blood flow and improve intermittent claudication  
Used to treat varicosities, cerebral vascular insufficiency, dementia, vertigo, and SSRI-induced sexual dysfunction
- \$1 billion in US sales annually
- Most frequently prescribed herb in Germany



# Ginkgo biloba

- Dosing: 120-240 mg/d po divided bid/tid
- Likely safe when used in appropriate doses for up to a year, unsafe intravenously
- Possibly effective in dementias (equivalent to a six month delay in disease progression), in improving cognitive function in normal adults and in improving pain free walking distances
- Ineffective for memory enhancement, ADHD, depression

# Ginkgo biloba



- Precautions and interactions: Ginkgolide is a selective antagonist of platelet aggregation. Case reports of subdural hematoma and spontaneous bleeding with ASA use. Reports of GI disturbances and CNS symptom
- Ginkgo and caffeine may increase risk of subdural hematomas
- Ginkgo helped SSRI induced sexual dysfunction 91% in women, 76% in men (Cohen and Bartlik 1998)
- Use with extreme caution with stimulants



# Garlic

- Uses: Improved lipid profiles, claims for antibacterial, antithrombotic, hypotensive, anti-inflammatory and anti-cancer activities
- Active ingredient: Allicin
- Probably safe in usual doses for up to 4 years
- Dosing: standardized extract 200-400 mg tid, fresh-4 gm per day = 1 clove
- Possibly effective for moderate 4-12% decrease in cholesterol levels and BP
- Ineffective against H. Pylori





# Garlic

- Heat and acid inactivate allicin, enteric coated products show best results
- May increase effects of anticoagulants, may inhibit thyroid preparations
- Precautions and interactions: Inhibited platelet aggregation (interaction with anticoagulants), may reduce blood sugar so use with caution with various hypoglycemic agents



# Black Cohosh

- Uses: Menopausal symptoms, induction of labor, PMS and as an insect repellent
- Likely safe when used orally and appropriately, studied up to 6 months
- Likely unsafe in pregnancy and lactation
- Possibly effective for menopausal symptoms, may take up to 4 weeks to work
- Mechanism is estrogen-like effects, safety in cancer patients not yet totally determined
- Usual dose: 300-2000 mg of the dried rhizome

# Echinacea



- Uses: Prophylaxis and treatment of cold and flu symptoms (stimulation of phagocytes), immune system stimulation
- Likely safe when used short-term up to 12 weeks
- Possibly effective for decreasing symptoms of cold and flu
- Possibly ineffective for preventing URI's



# Echinacea

- \$14 million spent annually, more popular in Europe
- Precautions and interactions: May be immunosuppressive with continuous use, can interfere with cyclosporin



# St. John's Wort (*Hypericum*)

- Uses: Depression, Anxiety, Antiviral Agent
- #1 Anti-depressant in Germany
- Major action is the inhibition of serotonin, norepinephrine and dopamine uptake and down-regulation of receptors, standardized on hypericin content
- Likely safe in usual doses, in high doses can cause severe skin reactions





# St. John's Wort

- Dosage: Daily dose of 900 mg of SJW extract (standardized to 0.3% hypericin) found to be equivalent to 20 mg fluoxetine
- Doses up to 1800 mg tolerated in severe depression
- Likely effective in mild to moderate depression
- Possibly ineffective as antiretroviral agent (and may decrease effectiveness of HIV)



# Saint John's Wort

- Contraindications: Severe depression with akinetic mutism, suicidal tendencies, severe agitation, hypersensitivity and pregnancy (estrogen effects)
- Precautions: **photosensitivity**
- Interactions: May precipitate hypertensive crisis with MAO inhibitors (Mueller & Shaefer, 1996)
- May induce “serotonin syndrome” with SSRI's and with Triptans
- Interferes with cyclosporine, may cause transplant rejection
- May cause hypertension with tyramine containing foods
- Safe with benzodiazapines

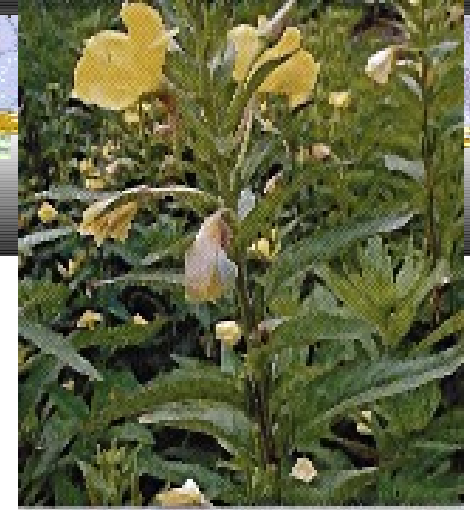


# Saw Palmetto

- Uses: For male genitourinary problems (BPH), prostate cancer, antisepsis
- Likely safe in usual doses for up to one year
- Likely effective for BPH symptoms
- Possibly effective for adjunctive therapy for prostate cancer
- Precautions and interactions: Due to anti-testosterone action do not use in pregnancy or children, can cause stomach upset, no psychotropic interactions
- Dosing: lipophilic extract 320 mg po qd or whole berries 1-2 gm po qd

# Evening Primrose

- Uses: Lower cholesterol, treat atopic dermatitis, arthritis, PMS, mastalgia
- High in gammalinolenic acid (GLA) and linolenic acid, prostaglandin precursors, essential fatty acids
- Safe in usual doses, increases delivery complications
- Dosage 2-4 g daily of oil
- Likely effective for mastalgia, ineffective for PMS
- Precautions and interactions: May aggravate temporal lobe epilepsy, interacts with some anti-seizure medications, case reports of seizures in schizophrenics on phenothiazides







# Cranberry

- Used for treatment and prophylaxis of UTI
- Mechanism: Acidifies urine, decreases bacterial adhesion to bladder wall
- Likely safe in food amounts
- Likely effective as preventive agent
- Dosage: Prophylaxis 90 ml daily
- Treatment 360-960 ml per day or 1500 gms fruit
- Precautions and interactions: Overuse can cause diarrhea, no psychotropic interactions



# Valerian

- *Valeriana officinalis* root extract used to promote sleep
- Increases levels of GABA in CNS
- Dosage 400-900 mg extract 2 hrs prior to bed
- Possibly safe in short term (14 days), possibly unsafe for long term use (withdrawal)
- Possibly effective for subjective sleep quality
- May potentiate CNS depressants especially benzodiazapines



# Feverfew

- Uses: Migraine headaches (vasoconstrictive), used for menstrual problems and fever
- Dosage: 50-100 mg daily or 2.5 fresh leaves
- Possibly safe in usual doses
- Possibly effective in preventing and decreasing severity of migraines
- Precautions and interactions: Leaves can cause mouth ulcerations, may cause menstrual or lactation problems, occasional GI side effects, may increase effects of anticoagulants, *reported hypertensive crisis with triptans*

# Ma Huang or Ephedra



- FDA Ban: 30 December 2003
- Uses: bronchial asthma, weight loss, athletic performance enhancer
- Likely safe in low doses for 7 days ( $<24$  mg/d)
- Likely unsafe in higher doses for longer periods, associated with MI, stroke, seizures and death
- Likely effective for bronchospasm, ineffective for weight loss as single agent
- Dosage: 15-20 mg given up to qid



# Ephedra Problems

- ☀ Synergistic effect with caffeine, decongestants, and stimulants
- ☀ Pro-arrhythmic effects with cardiac glycosides and halothane
- ☀ MAO inhibitors potentiate stimulation effects
- ☀ Can increase agitation associated with SSRI's
- ☀ Overdose syndrome can be fatal
- ☀ May be detected in urine screening as a banded substance





# The New England Journal of Medicine

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Volume 343(25)

21 December 2000

pp 1833-1838

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**Adverse Cardiovascular and Central Nervous System Events  
Associated with Dietary Supplements Containing Ephedra  
Alkaloids**

[Original Articles]

Haller, Christine A.; Benowitz, Neal L.

**140 Events, 1/3 definitely-related to supplement  
10 deaths, 10 strokes, 13 permanent disabilities**



# Ephedra Substitutes

- Guarana – contains caffeine and theophylline-like compounds –highly arrhythmagenic
- Green Tea Extract –contains caffeine and diuretic
- Citrus Aurantium Extract – contains synephrine



# Kava Kava

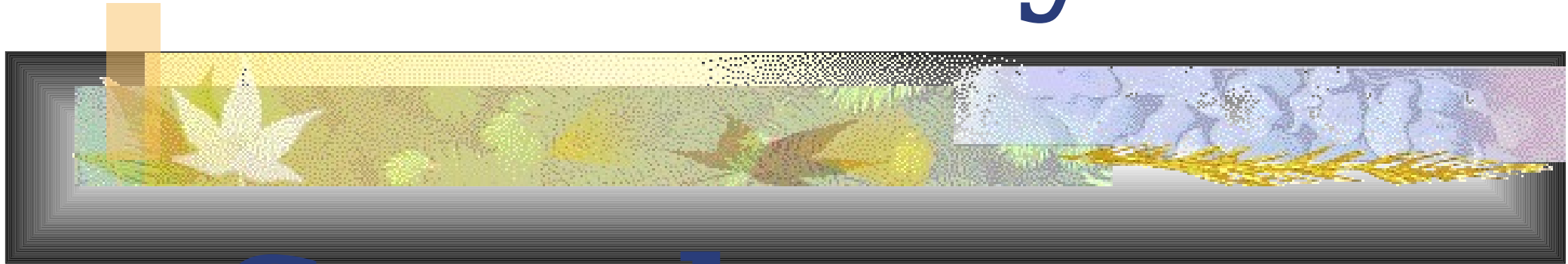
- Uses: Nervous tension (anxiety), stress and agitation, insomnia
- Kava pyrones have central muscle-relaxing, anticonvulsive, hypnotic/sedative effects by interaction with ion channels and GABA sites
- Possibly unsafe-studies show safe use for up to six months but 68 documented liver failures even with short term use
- Likely effective: Head to Head comparison to benzodiazapines showed equal efficacy for anxiety (Woelk, 1993)
- Dosage: 100 mg tid of 70% kava-lactone extract



# Kava Kava Interactions

- Synergy with Alcohol. EtOH potentiates Kava toxicity
- Reports of coma with Kava and Xanax
- Potentiates all CNS depressants
- Antagonizes dopamine, do not use in Parkinson's patients
- Interaction with cimetidine causes confusion and disorientation

# Dietary



# Supplements



# Glucosamine


- Uses: osteoarthritis
- 1500 mg glucosamine sulfate or hydrochloride per day
- Likely safe in usual doses up to 3 years
- Likely effective for osteoarthritis symptoms after 4 weeks, comparable to NSAIDs
- In the lab glucosamine stimulates metabolism of chondrocytes in the articular cartilage and of synoviocytes in the synovial tissues





# Glucosamine

- Synthesized or extracted from marine exoskeletons – beware of shellfish allergies
- Some theoretical concerns about increased glucose and insulin levels
- Commonly combined with chondroitin products (200-400 mg)-similar efficacy-no proof of synergy yet



# S-adenosyl-L-methionine - SAMe

- Uses: Depression, arthritis, liver disease, heart disease
- Naturally occurring molecule found everywhere in body, involved in 100's of reactions
- Used orally and injectable  
Dosing: 400-1600 mg/d po  
200-800 mg/d IV or IM
- Likely safe for up to 2 years



# SAMe

- Likely effective for osteoarthritis, equal to NSAIDs, for depression parenterally
- Possibly effective for depression, fibromyalgia, for normalizing liver functions in various hepatic disorders, for AIDs related myelopathy
- Has serotonin effects so beware with other serotonin-affecting medications



# Coenzyme Q10

- Uses: CHF, diabetes, myopathy (statin-induced), HBP, mitochondrial cytopathies
- A vitamin-like compound found in the nuclei and mitochondria of cells- a co-factor in many reactions as an anti-oxidant
- Likely safe for use up to 3 years
- Effective for mitochondrial encephalomyopathies (FDA Orphan Drug)
- Possibly effective for CHF especially in combination with usual therapy, for hypertension especially isolated systolic hypertension
- Possibly ineffective in diabetes and exercise tolerance



# Chromium

- An essential trace element used for athletic enhancement, diabetes, hyperlipidemia and weight loss.
- Dosing: 200-1000 mcg/d in divided doses
- Likely safe in doses less than 200 mcg/day
- Possibly effective for hyperlipidemia and increasing HDL levels and in AODM
- Likely ineffective for weight loss and athletic enhancement



# Melatonin

- A naturally occurring hormone produced in the pineal gland used endogenously for dementia, jet lag, insomnia, anti-aging agent
- Dosing: Usual 5 mg po qhs
- FDA Orphan Drug for circadian rhythm problems in the blind
- Possibly safe at usual doses up to 2 months
- Possibly unsafe in children, affects gonadal development





# Melatonin

- Likely effective for reducing the symptoms of jet lag, for establishing sleep cycles in the blind, for insomnia in the elderly
- Possibly effective for thrombocytopenia in cancer and cancer treatments and as an adjuvant therapy in certain cancers
- Possibly ineffective in improving sleep in normal people or shift work adjustment
- Ineffective for depression
- Avoid animal sources, use lab prepared products



# Selenium

- An element used for preventing cancer, arthritis and treating AIDS
- Likely safe at doses up to 400 mcg/d, usual dose 200 mcg/d
- Likely unsafe at higher doses
- Possibly effective at reducing total cancer mortality and incidence esp. prostate, lung and colorectal
- Possibly ineffective for AIDS and arthritis



# Omega 3 Fatty Acids

- Fish oils (eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) ) are used for hyperlipidemia, CAD, HBP, arthritis and weight loss
- Dosage: 1-4 gm po daily
- Likely safe in usual doses (on GRAS list)
- Possibly unsafe in high doses due to bleeding problems (prevents absorption of fat soluble vitamins)



# Omega 3 Fatty Acids

- Likely effective for hypertriglyceridemia
- Possibly effective for mortality from CAD and sudden cardiac death, for stroke risk reduction, for mild hypertension, to prevent re-stenosis after stent placement and for weight loss
- Probably ineffective for diabetes



# Creatine

- Uses: Enhanced exercise performance and increased muscle mass
- Mechanism: Donates phosphate group to form ATP, Shifts fluids from intravascular space to intracellular space- “gets you pumped”
- Loading dose: 20 gms per day x 5 days then maintenance dose of 2 gms per day
- Safe at appropriate doses for up to 5 years
- Possibly effective for short, burst exercise and for CHF
- Ineffective for athletic conditioning by itself



# The H.E.R.B.A.L. Mnemonic

©  Hear the Patient out with respect

 Educate the patient

 Record and document

 Beware

 Agree to discuss

 Learn about new and popular supplements





# Conclusions

- Polypharmacy is common among supplement users in USA
- Many assume herbs and supplements are safe
- Many pharmacological actions but dangerous side effects and interactions exist
- Be sure to ask your patients (non-judgmental)
- Knowledge is our best weapon and protection



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